DOVZHENKO, A.S., inzh.

Vibration strength of walls of solid crane beams. Stroi. prom. 36 no.8:27-31 Ag '58. (MIRA 11:9)
(Cranes, derricks, etc.) (Girders--Vibration)

DOVZHENKO, A. S., Cand Tech Sci -- (diss) "An Experi ental Study of the Strength of Solid Welded Crane-Support Beams Under Repeated Loads," Moscow, 1960; 18 pages, with illustrations. (Academy of Construction and Arch t .cture USSR. Central Scientific-Research Institute of Building Construction; TSNIISK. Laboratory of Metal Structures); 200 copies; price not given. (KL, 21-60, 123)

DOVZHENKO, A.S., inzh.

Causes of the destruction of the upper boom joints in crane beams. Prom.stroi. 38 no.1:37-40 '60. (MIRA 13:5)
(Cranes, derricks, etc.)

DOVZHENKO, A.S., inzh.

Performance of aluminum-alloy joints with high-strength steel bolts.
Prom. stroi. 38 no.10:26-28 '60. (MIRA 13:9)
(Aluminum alloys) (Steel, Structural)

DOVZHENKO, A.S., kand.tekhn.nauk

Causes of the formation of fissures in the compressed zone of welded crane girders. Prom. stroi. 39 no.3:57-60 '61.
(MIRA 14:4)

(Girders)

DOVZHENKO, A.S., kand.tekhn.nauk

Bearing capacity of steel elements joined with high-strength bolts. Prom.stroi. 39 no.8:51-55 '61. (MIRA 14:9)
(Building, Iron and steel)
(Bolts and nuts)

DOVZHENKO, V.S., kand.tekhn.nauk

Causes of failure in compressed areas of welded crane beams.
Mat. po met.konstr. no.8:259-271 '64.
(MIRA 18:5)

L 02522-67 EWT(d)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/IG/HM/EM

ACC NR: AT6022514 SOURCE CODE: UR/2787/65/000/010/0117/0156

AUTHOR: Mel'nikov, N. P. (Doctor of technical sciences, Professor); Dovzhenko, A. S. (Candidate of technical sciences); Tomling, Yu. R. (Engineer)

ORG: None

TITLE: Experimental study of the static strength of thick welded vessel elements during transition to a state of brittle fracture

SOURCE: Moskow. Gosudarstvennyy institut po proyektirovaniyu, issledovaniyu i ispytaniyu stal'nykh konstruktsiy i mostov. Materialy po metallicheskim konstruktsiyam, no. 10, 1965, 117-156

TOPIC TAGS: static load test, stress analysis, stress concentration, shear strength, weld evaluation

ABSTRACT: The authors study the static strength of thick welded vessel elements under conditions of transition into a brittle fracture state. The work is divided into two sections: the first section is concerned with the study of the linear stressed state while the second is devoted to the plane stressed state. Three series of tests were performed: 1. testing thick plates made of base metal, and welded joints at normal and below-zero temperatures; 2. testing thick plates reinforced with circular ribs at openings; 3. testing a thick plate with four holes at

Card 1/2

L 02522-67

ACC NR: AT6022514 3

normal, elevated and below-zero temperatures. All of the tests are concerned with the first section of this study. The test data are compared for the thick-plate specimens which were subjected to axisymmetric stretching. A table is given showing the basic mechanical strength characteristics such as stress concentration factors, types of failure and values of residual deformation. These are given in the order of their static testing. These data show that stress deformation curves for thick welded plate specimens subjected to axisymmetric stretching deviate from the stretching curve of standard specimens and for thick-plate specimens made from the base metal. Three types of failure were observed in axisymmetric stretching of thick-plate and welded joints: ductile fracture due to shear; ductile-brittle failure due to shear and tearing; nearly brittle or pure failure is a particular type of brittle failure caused by tearing. These tests make it possible to produce thick-walled vessels with welded-in branch pipes which are capable of withstanding the transition of the structural elements from ductile to brittle failure. It is shown that the nature of the linear stressed state significantly aids the working conditions of thick plates as compared to the plane stressed state. This makes it necessary to withhold final conclusions until such elements have been studied with respect to the plane stressed state. Orig. art. has: 22 figures, 2 tables.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 007

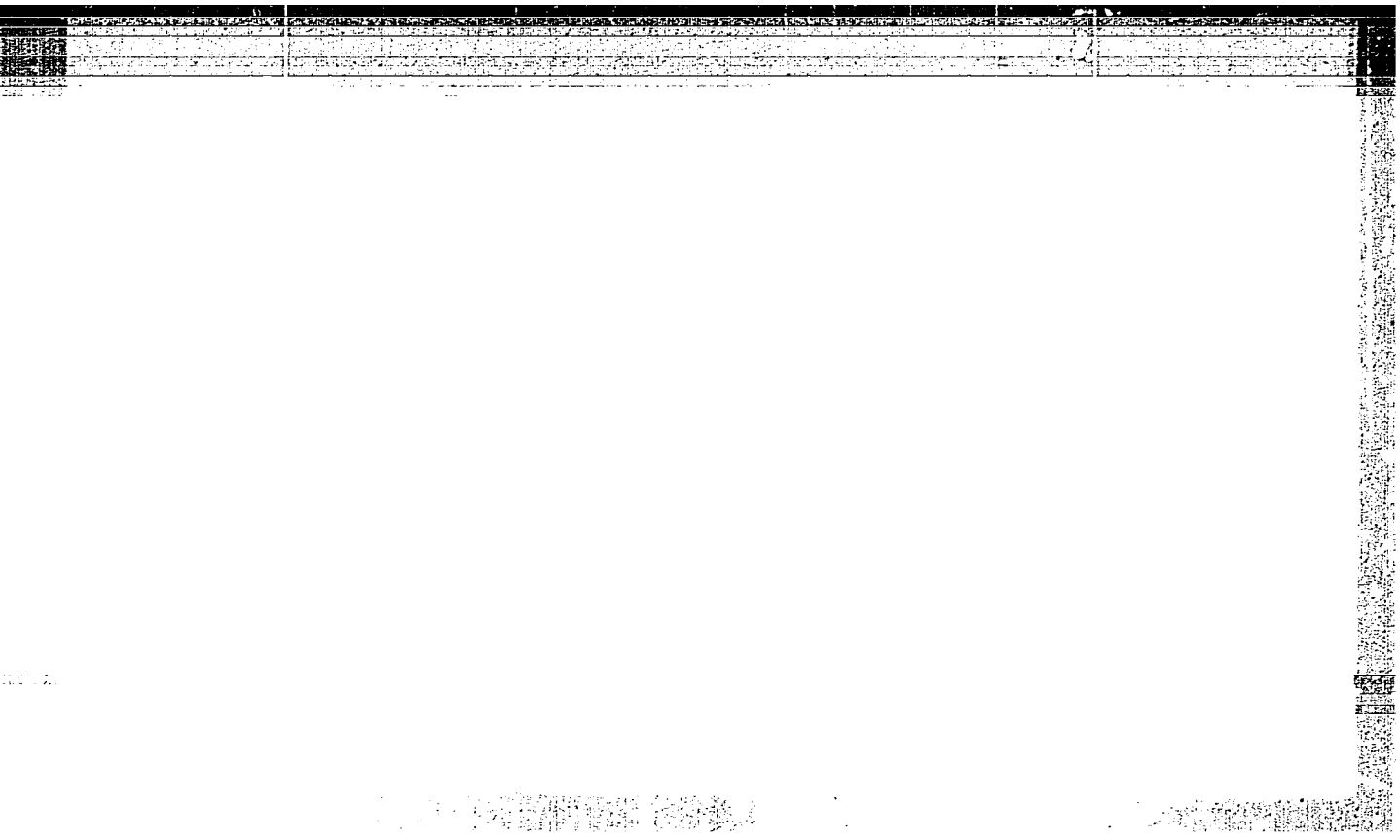
Card 2/2 ech

DOVZHENKO, F. P.

DOVZHENKO, F. P. -- "Study of the Dependence of the Viscosity of Some Binary Liquid Mixture on Temperature and Composition."*(Dissertations For Degrees in Science and Engineering Defended at USSR Higher Educational Institutions)(29) Min Higher Education USSR, Odessa State U imeni I. I. Mechnikov, Odessa, 1955

SO: Knizhnaya Letopis' No 29, 16 July 1955

* For the Degree of Candidate in Physicomathematical Sciences



A Test of the Equation by G.M.Panchenkov. The Temperature Dependence of the Viscosity Coefficient for Binary Liquid Mixtures

structure of the liquid. There are 8 tables and 4 Slavic references.

ASSOCIATION: Odessa Construction Engineering Institute (Odesskiy inzhenerno-stroitel'nyy institut)

SUBMITTED: July 25, 1956

AVAILABLE: Library of Congress

Card 2/2

DOVZHENKO, G.A.

Progressive work methods used by our boring gangs. Kolyma 21 no.1:11-13 Ja '59. (MIRA 12:6)

1.Normativno-issledovatel'skaya stantsiya Magadanskogo sovnarkhoza. (Magadan Province--Boring)

DOVZHENKO, G.I.; YAKOVLEVA, S.M.

Pathogenesis and treatment of climacteric neuroses. Vop. psikh. i nevr. no.9:391-399 '62. (MIRA 17:1)

1. Kafedra akusherstva i ginekologii Voyenno-meditsinskoy ordena Lenina akademii imeni S.M. Kirova (nachal'nik kafedry - chlen-korrespondent AMN SSSR, prof. K.M. Figurnov[deceased]).

DOVZHENKO, G.I.

DOVZHENKO G.I.

O primenenii elektro-magnita v ginekologicheskoi praktike.
[Application of the electromagnet in gynecological practice.]

1. Of the Department of Obstetrics and Gynecology (Head--Prof. K. M. Figurnov, Major-General, Medical Corps) of the Military Medical Academy imeni S. M. Kirov.

Klin. 19, 5, Nov. 1950

DOVZHENKO, G.I., dotsent (Leningrad).

Case of recurrent lymphatic cyst of the ligamentum latum uteri and of the recto-uterine excavation. Akush.i gin. no.2:67-69 Mr-Ap '53. (MLRA 6:5)
(Pelvis--Tumors)

DOVZHENKO, G.I., dotsent.

Case of ectopic pregnancy at term. Akush.i gin. no.2:87-88 Mr-Ap '54. (MLRA 7:6)

(Pregnancy, Extrauterine)

DOVZHENKO, G.I.

EXCERPTA MEDICA Sec 11 Vol.11/6 O.R.L. June 58

1075. SOUND PERCEPTION IN WOMEN DURING VARIOUS PHASES OF THE MENSTRUAL CYCLE AND EARLY STAGES OF PREGNANCY (Russian text) - Dovzhenko G. I. In the book: Voprosy neiro-gumoralnoi regulyatsii fiziologicheskikh i patologicheskikh protsessov zhenskoi polovoi sfery 1956 (66-71)

Based on the assumption that various physiologic conditions of the genital sphere and various concentrations of sex hormones in the organism influence the functional state of the cerebral cortex and the threshold of audibility, the author investigated sound perception in 28 girls during menstruation, and 22 pregnant women. For determination of the hearing acuity a sound generator constructed by Kalganov was used. It was found that the sound perception in 1/3 of the examined girls was slightly lower during menstruation than in the intermenstrual period. An increase in audibility was noted in 3 girls. In one half of the examined pregnant women the hearing acuity was lower on the eve of termination of pregnancy than 5-10 days later. (S)

KUZNETSOV, V.I., polkovnik med. sluzhby; BARONOV, V.A., polkovnik med. sluzhby; TITOV, A.I., polkovnik med. sluzhby, dots.; FIALKOVSKIY, V.V., polkovnik med. sluzhby; SMIRNOV, K.K., polkovnik med. sluzhby, kand. med. nauk; DOVZHENKO, G.I., polkovnik med. sluzhby; DIVNENKO, P.G., polkovnik med. sluzhby; GORYUSHIN, G.S., podpolkovnik med. sluzhby; SHCHERBEKOV, N.I. podpolkovnik med. sluzhby; ZHUK, Ye. G., podpolkovnik med. sluzhby; BUTOMO, N.V., mayor med. sluzhby; PREOBRAZHENSKIY, P.V., mayor med. sluzhby; TIKHONOV, K.B., mayor med. sluzhby

Clinical manifestations in subjects exposed to prolonged ionizing irradiation. Voen. med. zhur. no.2:40-43 F '57 (MIRA 12:7)
(RADIATIONS, effects,
clin. manifest. in subjects exposed to prolonged ionizing irradiation (Rus))

DOVZHENKO, G.I., prof.

Surgical treatment of urinary incontinence in women with complete destruction of the urethra. Urologiia. 29 no.2:54-56 Mr-Ap '64. (MIRA 18:7)

1. Kafedra akusherstva i ginekologii (zav. - prof. G.I.Dovzhenko) Voyenno-meditsinskoy ordena Lenina akademii imeni Kirova, Leningrad.

DOVZHENKO, L.I.; BELOUSOVA, N.I.; PONOMAREVA, A.K.

Hereditary capacity for the intensive development of ovaries without pollination in corn. Trudy TSSBS no. 2:36-41 (MIRA 17:9)

MANCHUZHENKO, A.; IL'IN, M.; STRAZOV, K. (Kiyev); SHABUROV, Yu. (Kazan');
ELYAKHOV, L.; DOVZHENKO, N.; DUBININ, G.

Editor's mail. Sov. profsoiuzy 16 no.19:42-48 O '60. (MIRA 13:10)

1. Pervyy sekretar' Kamensk-Ural'skogo gorkoma Kommunisticheskoy Partii Sovetskogo Soyuza, Sverdlovskaya, oblast' (for Manchuzenko). 2. Instruktor Krasnodarskogo krayevogo soveta profsoyuzov (for Il'in); 3. Instruktor Stalinskogo oblsovprofa (for Dovzhenko). 4. Predsedatel' pravleniya kluba imeni Gor'kogo, zernosovkhoz "Gigant" (for Dubinin).
(Trade unions)

DOVZHENKO, N.

Under public control. Sov. profsoiuzy 17 no.7:22-23 Ap '61.
(MIRA 14:3)

1. Neshtatnyy korrespondent zhurnala "Sovetskiye profsoyuza."
g. Stalino.
(Stalino Province--Socialist competition)
(Stalino Province--Trade unions)

DOVZHENKO, N.A.

Changes in functions of the system of blood sugar level regulation during prolonged and intense activity. Vop. fiziol. no.10:146-151 '54 (MLRA 10:5)

1. Kiyevskiy meditsinskiy institut, Kafedra normal'noy fiziologii.
(BLOOD SUGAR) (EXERCISE)

DOVZHENKO, M. A.

DOVZHENKO, M. A. - "The processes of fatigue and restoration of the function of blood-sugar regulation". Kiev, 1955. Kiev Order of Labor Red Banner Medical Inst imeni Academician A. A. Bogomolets. (Dissertation for the Degree of Candidate of Medical Science.)

SO: Knizhnaya Letopis', No. 43, 22 October 1955. Moscow

DMITRIEVSKIY, G.Ye., DOVZHENKO, N.N.

Precipitation of sodium fluosilicate from solutions of fluosilicic acid by sodium sulfate. Nauch. zhegod. Khim. fak. Gd. un. no.2049-51 '61. (MIRA 17:8)

DOVZHENKO, O.A.

Joint conference on the utilization of petrurgical raw materials in the Ukrainian S.S.R. Visnyk AN URSR 26 no.1:54-55 Ja '55. (MLRA 8:3)
(Stone, Cast)

EWT(d)/EWT(m)/EWP(w)/EWP(v)/T/EWP(t)/ETI(k) IJP(c)

ACC NR: AP6006334 SOURCE CODE: UR/0413/66/000/002/0057/0057

AUTHOR: Paton, B. Ye.; Dudko, D. A.; Medovar, B. I.; Lutsyuk-Khudin, V. A.; Sovenko, V. Ya.; Kumysh, I. I.; Andrianov, G. G.; Karpov, V. F.; Dovzhenko, N. F.; Antonets, D. P.; Kuzema, I. D.

ORG: none

TITLE: Method of producing composite rolled stock. Class 21, No. 177985 [announced by Electric Welding Institute im. Ye. O. Paton (Institut Elektrosvarki)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1966, 57

TOPIC TAGS: welding, metal rolling, sandwich rolling

ABSTRACT: An Author Certificate has been issued for a method of producing composite rolled metal by using a billet consisting of ingots or plates welded together by electroslag welding. To save on stainless steel, lower the thickness of the clad layer, and simplify the welding procedure, it is suggested that the process be begun with a heterogeneous plate made from prewelded and prerolled smaller billets having been a carbon steel and clad layer, and then adding additional ingots or plates to produce sandwich rolled stock. [LD]

SUB CODE: 13/ SUBM DATE: 11Apr63 ORIG: none/ OTH REF: none/

Card 1/1 UDC: 621.791.793:621.771.2-419.5

Dovzhenko, O. I.

USSR/Physics - Charged particles

Card 1/ Pub. 22 - 13/59

Authors : Dovzhenko, O. I., and Nikol'skiy, S. I.

Title : Spatial distribution of charged particles at short distances from the axis of a wide atmospheric shower

Periodical : Dos. AN SSSR 102/2, 241-244, May 11, 1955

Abstract : Results of experiments with wide atmospheric showers of charged particles of various energies, conducted at the top of Pamirs mountains are described. The experiments were conducted for the purpose of establishing a law governing the distribution of charged particles around the axes of the showers at short (0.5 - 10 meters) distances from them. The data obtained, however, can not be explained by [illegible] references: 3 [illegible] and 4 USSR (1948-1954). Diagram; graphs.

Institution : Acad. of Sc., USSR, Physical Institute imeni P. N. Lebedev

Presented by : Academician D. V. Skobel'tsin, February 2, 1955

The Energy Spectrum of Myons in the Broad Atmospheric Showers of Cosmic Rays.

were fitted. As in the detectors counters are used which are connected with a hodoscopic device, the cases of the passage of nuclear-passive particles (myons) and of nuclear-active particles could be distinguished according to their shower-forming ability. The large system consisting of hodoscopic counters, which was fitted above the detectors of the penetrating particles, permitted the determination of the position of the "trunk" and of the total number of the charged particles in each recorded broad atmospheric shower. In all cases investigated here the energy spectrum might be represented by the exponential law $E_\mu^{-\Gamma}$, where E_μ denotes the energy of the myons. In the vicinity of the trunk of a broad atmospheric shower the energy spectrum of the myons in the interval 0,44 - 3,5 BeV does not depend upon the energy of the primary particles. A similar result is obtained also in the case of the investigation of the periphery of a broad atmospheric shower. The results found here show that the energy spectrum of the myons becomes softer with increasing distance from the axis

CARD 2/3

PA - 2957

The Energy Spectrum of Myons in the Broad Atmospheric Showers of Cosmic Rays.

of the broad atmospheric shower.
(2 Illustrations and 2 tables)

ASSOCIATION: Physical Institute "P.N. LEBEDEV" of the Academy of Science of the U.S.S.R.
PRESENTED BY: -
SUBMITTED: 3.11. 1956.
AVAILABLE: Library of Congress.

CARD 3/3

AUTHORS: Danilova, T. V., Dovzhenko, O. I., Nikol'skiy, S. I., Rakobol'skaya, I. V. SOV/56-34-3-2/55

TITLE: Cloud Chamber Investigation of the Electron-Photon Component of Extensive Atmospheric Showers Near the Axis of the shower at an Altitude of 3860 m by Means of Vil'son Camera (Issledovaniye elektronno-fotonnoy komponenty shirokikh atmosfernykh livney vblizi osi livnya na vysote 3860 m s pomoshch'yu kamery Vil'sona)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 3, pp. 541-547 (USSR)

ABSTRACT: The present work is a continuation of a paper by I. A. Ivanovskaya and others (Ref 1), and it investigates the energy spectra of the electron-photon component in extensive atmospheric showers. The measurements were carried out on the Pamir by means of a rectangular cloud-chamber and with 1000 counters (connected to a hodoscopic device) in autumn 1955. Seven lead plates of different thickness were mounted within this cloud chamber. The cases of passage of an extensive atmospheric shower were separated by means of a system of

Card 1/4

Cloud Chamber Investigation of the Electron-Photon Component of Extensive Atmospheric Showers Near the Axis of the Shower at an Altitude of 3860 m by Means of Vil'son Camera

coincidence and anticoincidence pulses in some groups of counters. The registered distribution of the showers on the number of particles is shown in a diagram. The position of the shower axis and the total number of particles within the shower were determined from the spatial distribution of the charged particles. The energy of the electrons and photons which caused the shower in the lead pla es inside the chamber was determined by means of the comparison of the total number of particles within the shower with the number of particles computed from the cascade curves for lead. In order to compare the experimental results with the predictions of electromagnetic cascade theory the authors computed the integral energy spectra of the electrons. The results of these spectra coincide with one another in the case of an energy of 10^9 eV for the distances of from 2 to 4 m from the axis. These and also other mentioned experimental results make possible the following final conclusions: Near the axis of an extensive atmospheric shower deficiency of electrons and photons with high energies is

Cloud Chamber Investigation of the Electron-Photon Component of Extensive Atmospheric Showers Near the Axis of the Shower at an Altitude of 3860 m by Means of Vil'son Camera

observed. This obviously is connected with a flow of photons of low energy near the axis as well as with the fact that in the production of the electron-photon component of the shower nuclear-active particles with an energy of from 10^{10}-10^{12} eV play a part. The spectrum of the electron-photon component in extensive atmospheric showers caused by primary particles with an energy of $\leq 2.10^{14}$ eV remains unchanged with a change of the observational altitude. This can be explained by the equilibrium of the electronphoton component of extensive atmospheric showers with nuclear-active particles of high energy as well as by the predominant registration of extensive atmospheric showers (which formed at a certain absolute altitude above the pbservation level in the depth of the atmosphere).
There are 8 figures, 3 tables, and 8 references, 6 of which are Soviet

SOV/56-34-3-2/55

Cloud Chamber Investigation of the Electron-Photon Component of Extensive Atmospheric Showers Near the Axis of the Shower at an Altitude of 3860 m by Means of Vil'son Camera

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physical Institute imeni P. N. Lebedev AS USSR)

SUBMITTED: July 16, 1957

Card 4/4

AUTHORS: Dovzhenko, O. I., Kozhevnikov, O. A. SOV/56-34-6-37/51
Nikol'skiy, S. I., Rakobol'skaya, I. V.

TITLE: The Energy Spectrum of the Nuclear-Active Particles in the Extensive Air Showers (Energeticheskiy spektr yaderno-aktivnykh chastits v shirokikh atmosfernykh livnyakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 6, pp. 1637-1638 (USSR)

ABSTRACT: As a supplement of their previous paper (Ref 1) the authors investigated (at an altitude of 3860 m) the above mentioned energy spectrum. The nuclear-active particles were separated from the total particle flow in the extensive air shower according to the generation of an electron nuclear shower in lead plates which were located within a great rectangular cloud chamber. The total thickness of the lead plates was ~100 g/cm^2. A criterion is given for the separation of the cases with electron-nuclear showers from the cases with electromagnetic showers. The experiments were carried out in 2 different ways. In the first one there was no absorber above the cloud chamber, but in the second way - ~100 g/cm^2 Al. A sketch of the experimental apparatus is given, it registrat-

Card 1/3

ed the extensive air showers with total particle numbers from 10^4 to 10^6. As a result of the measurements carried out for 52 nuclear interactions the authors obtained the integral energy spectra of the nuclear-active particles in the energy interval 2 - 50 BeV for distances from 0 - 9 m from the axis of the extensive air shower. As the form of the energy spectrum was identical for both of the above-mentioned experimental variants their results were averaged. The integral energy spectrum of the nuclear-active particles obtained for the energy region 10 - 50 BeV may be approximated by an exponential function of the type E^{-k} with $k = 0,95 \pm 0,25$. By comparison of the observed number of the nuclear-active particles with the density of the electron flow in the showers recorded by the authors' apparatus, it was possible to estimate the share of the nuclear-active particles with >2 BeV in the total flow of the charged particles in the extensive air showers located within distances of 0 - 9 m from the axis. This share amounts to $(1,3 \pm 0,3)$ %, which is in good agreement with previous results obtained by means of a hodoscopic detector. There are 2 figures and 6 references, 6 of which are Soviet.

The Energy Spectrum of the Nuclear-Active Particles in the Extensive Air Showers

SOV/56-34-6-37/51

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev, AS USSR)

SUBMITTED: February 26, 1958

Card 3/3

20-118-5-14/59

AUTHORS: Dovzhenko, O.I., Zatsepin, V., Murzina, Ye., Nikol'skiy, S., Rakobol'skaya, I., Tukish, Ye.

TITLE: Investigation of Extensive Atmospheric Showers of Cosmic Radiation (Issledovaniye shirokikh atmosfernykh livney kosmicheskogo izlucheniya)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 5, pp.899-902 (USSR)

ABSTRACT: In autumn 1955 the energetic characteristics of extensive atmospheric showers were investigated at an altitude of 3860 m above the sea level. The lay-out of the experimental equipment is illustrated in a diagram. Extensive atmospheric showers caused by primary particles with an energy of from 2.10^{13}-10^{16} eV were separated by fourfold discharges in two groups of counters (with a mutual distance of two meters). A number of about 4.10^4 extensive atmospheric showers were recorded. A great number of counters was employed in these measurements. The energy spectrum of the myons at a distance

Card 1/4

Investigation of Extensive Atmospheric Showers of Cosmic Radiation

from the shower axis not exceeding 10 m can be expressed in the form $\sim 1/E^m$ in the energy interval of the myons of from E = 1,5 - 3,5 BeV. Here holds m = 0,27 $\pm$ 0,06. The authors report on the observations of the passage of shower cores through a detector for penetrating particles which was mounted at a depth of a water equivalent of 800 g/cm^2. The computed shower rate caused by primary particles with an energy of $E_o < 6.10^{14}$ eV completely agrees with the observed rate, whereas the observed shower rate caused by primary particles with $E > 6.10^{14}$ eV is several times as high as the expected rate. The spectrum of the electron-photon component in the core parts of the here observed atmospheric showers was investigated by means of a great cloud chamber, that is to say for energies of from 2.10^8 - 10^{10} eV at a varying distance from the shower axis. The experimentally determined spectra of the electron-photon component at distances up to 4 m from the shower axis showed a decrease of electrons and photons with high energies , contratry to predictions of cascade theory. This only holds, if the energy of the neutral pions responsible for the generation of the electron-photon component is set equal to 10^{12} eV. This contradiction between experiment and theory can be removed, if an essential in-

Investigation of Extensive Atmospheric Showers of Cosmic Radiation

fluence of the neutral pions with energies above 10^{10} eV on the electron-photon component of the shower is assumed. Filters of various thickness of different materials were mounted above the ionization chambers. This permitted to measure the energy flow, which is carried by the electron-photon component of the shower at various distances from the shower axis and also the determination of the energy of the nuclear-active shower particles. The energy of the particle with the highest energy in the core of the extensive atmospheric showers with less than 10^5 particles amounts to 10 % in the mean of the energy of the electron-photon component of the shower at the observation altitude. The remaining nuclear-active particles in the shower are distributed according to the law $\sim 1/E^n$, E denoting the energy of the nuclear active particles and $n = 0,9 \pm 0,2$ holding. The cores of the extensive atmospheric showers with a number of particles exceeding 10^{15} are very complicated. There are 3 figures, and 6 references, 6 of which are Soviet.

Card 3/4

20-118-5-14/59

Investigation of Extensive Atmospheric Showers of Cosmic Radiation

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute for Physics imeni P. N. Lebedev AS USSR)

PRESENTED: August 29, 1957, by D. V. Skobel'tsyn, Member, Academy of Sciences, USSR

SUBMITTED: July 22, 1957

Card 4/4

31528
S/627/60/002/000/010/027
D299/D304

3,2410 (1559, 2205, 2405)

AUTHORS: Dovzhenko, O. I., Nikols'kiy, S. I., and Nakobol'skaya, I. V.

TITLE: Study of electron-photon component of extensive air showers near the shower axis

SOURCE: International Conference on Cosmic Radiation. Moscow, 1959. Trudy. v. 2. Shirokiye atmosfernyye livni i kaskadnyye protsessy, 132-138

TEXT: The electron-photon component was investigated by a cloud chamber containing lead plates; thereby, cascade showers were created by the electrons and photons on passage through the chamber. In contradistinction to other investigations, the energy of the electrons and photons was not determined by the overall sum of particles in the entire cascade shower, but by the number of particles in the upper 5 sections of the chamber, in the region of the shower maximum. The present investigation was carried out in the fall of 1955 at an altitude of 3860 m (at Pamir Mountain), and during 1957-

Card 1/4

31528
S/627/60/002/000/010/027
D299/D304

Study of electron-photon ...

1958 at sea level (at Moscow). Two different methods of shower selection were used. In 70% of the cases the axes of the extensive air showers passed at a distance of 0 to 3 m from the cloud chamber. The total number of particles was determined by means of a hodoscope. In the Pamir investigations, 300 showers were recorded with number of particles per shower $\bar{N} = 10^5$. At Moscow, 2370 showers with $\bar{N} = 8 \cdot 10^3$ were registered. 1830 showers with $\bar{N} = 1.2 \cdot 10^4$, and 436 showers with $\bar{N} = 3 \cdot 10^4$. As a result of the experiments, the integral energy-spectra of the electron-photon component were obtained. From these spectra, the fraction of high-energy electrons and photons (with respect to the total number of particles in a shower) was determined. The results obtained for showers of various number of particles agree with each other within the limits of experimental error. No increase was observed in the high-energy electron and photon fraction with increasing number of particles. A comparison of experimental results with the predictions of cascade shower theory showed that the experimental spectra in the vicinity

Card 2/4

Study of electron-photon ...

of the shower axis, are deficient in high-energy electrons. Subsequently, the energy spectra of electrons were computed for showers in which the electron-photon component is in equilibrium with the nuclearactive component. The integral energy spectrum was constructed for distances of 0 to 3 m. from the shower axis. A considerable discrepancy was found between the theoretical and experimental curves. This may be due to the fact that the theoretical calculations did not properly take into account the initial conditions of creation and development of the electron-photon component. Further, the lateral distribution of high-energy electrons and photons in the core region was found (at distances of 0 to 0.3 m from the shower axis). If certain conditions were simultaneously fulfilled, then the core was considered to pass through the cloud chamber. For electrons and photons with energies $\geqslant 10^9$ ev., the density distribution of the particles can be expressed by $\rho(\geqslant 10^9) \sim r^{-n}$, where $n = 1.2 \pm 0.3$. From data obtained at the Pamir Mountain, it follows that $n = 1.6 \pm 0.3$ at distances of 1 to 7 m. A figure shows the distribution of electrons and photons, obtained at Moscow and the

Card 3/4

Study of electron-photon ...

Pamir Mountain, respectively. The energy spectra of electrons and photons were constructed on the basis of 12 cases when the core passed through the chamber (for distances of 0 to 0.3 m from the axis). The mean energy per charged particle in the region of the axis was approximately $3 \cdot 10^9$ ev., and at 0.3 to 3 m from the axis - approx. $4 \cdot 10^8$ ev. The obtained values for the mean energy and the mean density are in good agreement with the results of T. Kameda et al. (Ref. 7: This Trudy, p. 56). There are 2 figures, 1 table and 8 references: 6 Soviet-bloc and 2 non-Soviet-bloc (including one translation). The reference to the English-language publication reads as follows: W. Hazen. Phys. Rev., 85, 455, 1952.

Card 4/4

31530
S/627/60/002/000/012/027
D299/D305

3.2410 (1559, 2205, 2705)

AUTHORS: Dovzhenko, O. I., Zatsepin, G. T., Murzina, Ye. A., Nikol'skiy, S. I., and Yakovlev, V. I.

TITLE: Energy spectrum of nuclearactive component of cosmic radiation at 3860 m, and related extensive air showers

SOURCE: International Conference on Cosmic Radiation. Moscow, 1959. Trudy. v. 2. Shirokiye Atmosfernyye livni i kaskadnyye protsessy, 144-151

TEXT: Two series of experiments are described, of 1955 and of 1957. The apparatus used in 1957 permitted detecting extensive air showers exceeding 1000 particles only. The relation is established between the nuclearactive particles and the ionization bursts in the chambers. Computations showed that if the integral energy-spectrum of the incident nuclearactive particles is expressed by the power law $f(>E) = AE^{-\gamma}$, then the ionization spectrum is also described by a power law with the same γ. The experimentally obtained

Card 1/4

Energy spectrum of ...

energy spectrum of the nuclearactive component is plotted in a figure. From the figure it is clear that the integral energy spectrum of nuclearactive particles in the range of 10^{12} to $5 \cdot 10^{13}$ ev., can be expressed in the form $f(>E) = AE^{-\gamma}$, where $\gamma = 1.5 \pm 0.1$. The absolute intensity of the nuclearactive particles with energy $\geq 10^{12}$ ev. is 5.5 ± 0.6 hour^{-1}sterad^{-1}. By comparing the obtained intensity with the spectrum of the primary radiation and the number of low-energy nuclearactive particles at sea level, one obtains the absorption length for nuclearactive particles. In order to detect the air showers accompanying the nuclearactive particles, 15 cylindrical ionization chambers were used. The obtained integral number-spectrum is shown in a figure. It was found that the percentage of nuclearactive particles, accompanied by air showers, increases monotonically with the energy of the nuclearactive particles, varying between 76 and 88% for energies of $2 \cdot 10^{12}$ to $2.5 \cdot 10^{13}$ ev. The inter-

Card 2/4

31530
S/627/60/002/000/012/027
D299/D305

Energy spectrum of ...

action free-path was calculated by the change in the number of the recorded nuclearactive particles as a function of increasing thickness of the graphite layer above the ionization chamber. It was also found that the integral energy spectrum of nuclearactive particles can be expressed in the form $F(>E)\sim E^{-m}$, where $m = 0.9 \pm 0.2$. This formula apparently characterizes the spectrum of the nuclearactive component as a whole. Further, the energy spectra of nuclearactive components for showers of different total number of particles is determined, as well as for various distances from the shower axis. The procedure used for this purpose is described. The air showers under investigation were divided into 3 groups (according to total number of particles). A peculiar feature of the spectrum at distances of 0 to 1 m was the absence of nuclearactive particles with energies below 10^{11} ev. The integral spectra of nuclearactive particles for the 3 groups of showers are shown in a figure. The spectra are characterized by smooth shape even in the region where a shower contains 1 to 2 particles. By averaging, one obtains the

Card 3/4

Energy spectrum of ...

31530
S/627/60/002/000/012/027
D299/D305

energy spectrum $F(>E)\sim E^{-0.9 \pm 0.1}$ for $2.5 \cdot 10^{10} < E < 10^{12}$ ev. The dependence of the number of nuclearactive particles on the total number of particles can be expressed as $N^{1.5}$ for the range $N < 10^5$. With $N < 10^5$, the dependence of the number of nuclearactive particles on N changes its character. The comparatively softer character of the energy spectrum of nuclearactive particles with $N > 10^5$ is in qualitative agreement with the results obtained from another series of experiments; it is also one more proof of the possible change in the character of elementary nuclear interaction with primary-particle energies $\geq 3 \cdot 10^{14}$ ev. There are 6 figures, 2 tables and 14 references: 12 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: M Kaplon, J. Klose, D. Ritson, W. Walker. Phys. Rev., 91, 1573, 1953.

4

Card 4/4

24(5)

AUTHORS: Dovzhenko, O. I., Nikol'skiy, S. I., Rakobol'skaya, I. V.

SOV/56-36-1-3/62

TITLE: Investigation of the Cores of Broad Atmospheric Showers of Cosmic Rays by Means of a Cloud Chamber (Issledovaniye stvolov shirokikh atmosfernykh livney kosmicheskikh luchey pri pomoshchi kamery Vil'sona)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 1, pp 17-23 (USSR)

ABSTRACT: In the present paper investigations are described which were carried out (on sea level) in Moscow in 1957. Interest in investigations of extensive air showers increased considerably recently, because the investigation of structure, composition, energy distribution of particles as well as the Cherenkov radiation produced in the atmosphere can supply information concerning particles interaction at energies $>10^{13}$ eV. In this connection especially the investigation of shower cores is of importance, which also forms the subject of the present paper.

For the investigation a rectangular cloud chamber and counters were used. The arrangement was such that such cases of

Card 1/4

shower passages were selected for measurements, in which the flux of shower particles above the cloud chamber was greater than that recorded by more distant counter groups (Fig 1). The device is then described. Furthermore, the differential shower spectrum is calculated according to the number of particles on the basis of the following assumptions: 1) The shower particles are symmetrically distributed round the shower axis in form of a circle. 2) The differential distribution spectrum is assumed to have the form: $f(N)dN \sim N^{-(\gamma+1)}dN$, where $\gamma(N)$ is taken from reference 3. 3) The number of shower axes with particle numbers $N > 10^5$ amounts to $7.10^{-3}/m^2$ per hour (Ref 3). 4) The probability distribution of particle recording is assumed to correspond to the Poisson (Puasson) law. Calculation results are shown by figure 3.

Also the number of showers recorded per hour and the mean value of the density of charged particles was calculated, and calculated and experimental values are compared (Table 2). Agreement is good. Further, the number of shower cores of the electron-photon components for $N < 3.5.10^4$ and $N > 3.5.10^4$ are

calculated. In the former case, calculation results in ~ 10, and the experimental result is 9; in the latter case the calculated result is ~ 3, the experimental result 2. For the number of nuclear-active particles with energies of $\gtrsim 10^{11}$ ev 5 and 1-2 was calculated, while the experimental value was 4 and 0 respectively for the two N-values. 4 photographs are attached: Figure 4 shows a cloud chamber photograph of a penetrating electron-photon shower with $N \approx 10^4$, figure 5 a nuclear interaction at an energy of nuclear active particles of $> 10^{11}$ ev and $N = 3.3.10^4$; figure 6 also shows a nuclear interaction caused by charged particles in the first plate of the chamber, at an energy of nuclear active particles of $\geq 2.10^{11}$ ev and $N = 2.5.10^4$, and figure 8 shows a nuclear interaction at an energy of $< 10^{10}$ ev. The authors finally thank N. A. Dobrotin, Professor, and G. T. Zatsepin for their interest, N. G. Birger and D. S. Chernavskiy for discussing the

results, and O. A. Kozhevnikov, A. M. Mozhayev, B. V. Subbotin, and Ye. N. Tarasov for helping to carry out measurements. There are 7 figures, 3 tables, and 7 references, 4 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute imeni P. N. Lebedev of the Academy of Sciences, USSR)

SUBMITTED: June 14, 1958

03568
S/056/60/038/005/001/050
B006/B070

24.6900

AUTHORS: Dovzhenko, O. I., Nikol'skiy, S. I., Rakobol'skaya, I. V.

TITLE: The Energy Spectra of the Electron - Photon Component of Air Showers in the Neighborhood of the Shower Axis

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1361-1369

TEXT: The results given in publications on this topic are inexact and contradictory. The authors have therefore investigated the electron - photon energy spectrum within 3 m of the shower axis. The method of measurement and the experimental arrangement are described in detail. Fig. 1 shows the arrangement of the cloud chamber in which six lead plates of different thicknesses (total: 120 g/cm^2) are placed over one another along with the surrounding counters for the two control systems. Only showers with low particle-flux densities ($\bar{N}$ = $9 \cdot 10^3$, $1.2 \cdot 10^4$, and $3 \cdot 10^4$) were selected for study. Of these, 2370, 1830, and 436 showers, respectively, were recorded. Nearly 70% of all particles lay within the chosen radius of 3 m. The distribution of the charged particles in the showers with

The Energy Spectra of the Electron - Photon Component of Air Showers in the Neighborhood of the Shower Axis

$\bar{N} = 9 \cdot 10^3$ is shown in Fig. 3; this may be represented by $\varrho(>0) \sim r^{-n}$ with $n = 1.0 \pm 0.1$. Fig. 4 shows the integral electron-photon spectrum of all three shower groups; Fig. 5 shows the ratio between the electron- and the photon flux densities in the showers with $\bar{N} = 3 \cdot 10^4$ and $\bar{N} = 1.2 \cdot 10^4$.

The ratio $\Delta = \varrho(\geq 10^9)/\varrho(>0)$ between the three shower groups was calculated to be 16 ± 4, 15 ± 3, and 13 ± 3, respectively. The data of the present work are compared with those of Refs. 2-4 in Table 1. Numerical data referring to the radial distribution of the particles are given in Table 2. Fig. 6 shows the integral distribution with respect to the number of electrons and photons of each group with $E \geq 10^9$ ev. Experimental data are given as an average over all showers along with those measured for 12 cases of shower cores that passed through the cloud chamber. Poisson's distribution curves are shown for both these distributions. The experimentally observed distribution does not agree with Poisson's. Fig. 7 shows the integral energy spectrum of electrons and photons within 3 m of the shower axis. Fig. 8 shows the spatial distributions of electrons and photons having energies $\geq 10^9$ ev for $r \leq 0.3$ m. For these high-energy particles, the distribution

Card 2/3

The Energy Spectra of the Electron - Photon Component of Air Showers in the Neighborhood of the Shower Axis

83568
S/056/60/038/005/001/050
B006/B070

law $Q(\geq 10^9) \sim r^{-n}$ holds, where $n = 1.2 \pm 0.3$. The results obtained are compared with those of the cascade theory, for which purpose data of S. Z. Belen'kiy and I. P. Ivanenko are used. The conclusions are summarized as follows: 1) No change in the fraction of high-energy electrons and photons could be observed in the showers with an increase in the total number of particles. 2) The observed fraction of high-energy electrons and photons is considerably smaller than the theoretical one; and this is so whether the primary energy is assumed to be infinite, or an equilibrium between the electron-photon and the nuclear active components is assumed.

G. T. Zatsepin, I. P. Ivanenko, and L. I. Sarycheva are thanked for discussions; and D. F. Rakitin, O. N. Novoselov, I. A. Ivanovskaya, B. M. Mozhayev, and L. K. Bocharov for their assistance in the experiments.

There are 8 figures, 2 tables, and 8 references: 7 Soviet and 1 US.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics imeni P. N. Lebedev of the Academy of Sciences USSR)

SUBMITTED: December 18, 1959

Card 3/3

83774

S/056/60/039/003/034/045
B006/B063

24.6900

AUTHORS: Yemel'yanov, A. A., Dovzhenko, O. I.

TITLE: Spatial Distribution of High-energy Nuclear-active Particles in the Core of an Extensive Atmospheric Shower

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 3(9), pp. 814-821

TEXT: First, the authors discuss several problems relating to the spatial distribution of secondary shower particles. Then they pass over to the subject proper and first examine the passage of high-energy nuclear-active particles through the atmosphere. In doing so, they proceed from the equation of motion followed by the flux density function $P(E,t,\vec{r},\vec{\theta})$ of nuclear-active particles obeys. E is the particle energy, t the observational altitude (in nuclear interaction ranges), $\vec{r}$ the radius vector in the plane perpendicular to the shower axis, and $\vec{\theta}$ is a vector in the direction of particle motion. It is assumed that $E \gg Mc^2$ and $\theta \ll 1$. Various relations are derived for the distribution functions, and the mean squares $\vec{\theta}^2 = P_1(E)/P_0(E)$ and

Card 1/4

$\overline{r^2} = P_3(E)/P_0(E)$ are then examined. $P_0(E) = \int_0^\infty \int_{\vec{r}} \int_{\Omega} P(E,t,\vec{r},\vec{\theta})\, dt\, d\vec{r}\, d\vec{\theta}$,

$P_1(E) = \int_0^\infty \int_{\vec{r}} \int_{\Omega} P(E,t,\vec{r},\vec{\theta})\theta^2 dt\, d\vec{r}\, d\vec{\theta}$, and $P_3(E) = \int_0^\infty \int_{\vec{r}} \int_{\Omega} P(E,t,\vec{r},\vec{\theta}) r^2 dt\, d\vec{r}\, d\vec{\theta}$.

Then one obtains: $\overline{\theta^2} \approx 1.1(\mu c^2/E)^2 \left[b^2 + 0.7(p_\perp/\mu c)^2\right]$ and

$\overline{r^2} \approx 3.0(\mu c^2/E)^2 \left[b^2 + 0.7(p_\perp/\mu c)^2\right]$. These two formulas are accurate within $\pm 10\%$. For comparison with the experiment, the mean square radius for the particles must be expressed for an energy higher than a given one; then one obtains: $\overline{r^2}(\geq E) \approx (\mu c^2/E)^2 \left[b^2 + 0.7(p_\perp/\mu c)^2\right]$. For $E \gtrsim 5 \cdot 10^{11}$ ev, $b \approx 3$, and $p_\perp \approx 3\mu c$, the resulting theoretical value for the root-mean-square radius is

$\left[\overline{r^2}\ (\gtrsim 10^{12}\text{ ev})\right]^{1/2} \approx 0.6$ m (at an altitude of 3 860 m (Pamirs)).

Card 2/4

Spatial Distribution of High-energy Nuclear-active Particles in the Core of an Extensive Atmospheric Shower

S/056/60/039/003/034/045
B006/B063

$\left[\overline{r^2}\ (\gtrsim 10^{12}\ \text{ev})\right]^{1/2} \gtrsim 1$ m was obtained in the experimental way. The difference between experimental and theoretical values is explained by the fact that while the transverse momentum was taken to be ≈ 3 μc, it may be considerably higher. For particles with $E \gtrsim 5 \cdot 10^{11}$ ev, r enters the spatial distribution function as the product rE; the distribution function is formulated as $P(E,r,t) = P(E,t)F(rE/kE_\alpha)$. $P(E,t)$ is the total number of nuclear-active particles having an energy between E and E+dE. The second term is formulated as follows: $F(rE/kE_\alpha) = e^{-rE/kE_\alpha}$. Fig 1 shows the experimental and theoretical space distributions of particles with $E \gtrsim 5 \cdot 10^{11}$ ev and $E_\alpha \approx 1.5 \cdot 10^9$ ev. These values correspond to $b \approx 6$ and $p_\perp \approx 3$ μc. Fig 2 shows the energy spectrum of nuclear-active particles for a distance r of 0 - 1 m and (1 - 2) m from the axis of a shower with $N = 10^5$. The authors thank G. A. Milekhin, G.T. Zatsepin, S.I. Nikol'skiy and I. L. Rozental' for discussions; A. A. Pomanskiy for submitting results prior to publication; and G. Ya. Goryacheva and G. V. Minayeva for

Card 3/4

83774

Spatial Distribution of High-energy Nuclear-active Particles in the Core of an Extensive Atmospheric Shower

S/056/60/039/003/034/045
B006/B063

numerical computations. I. Ya. Pomeranchuk, A. B. Migdal, and L. D. Landau are mentioned. There are 2 figures and 14 references: 11 Soviet, 1 Italian, and 1 Japanese.

ASSOCIATION: Fizicheskiy Institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics imeni P. N. Lebedev of the Academy of Sciences USSR)

SUBMITTED: April 20, 1960

Card 4/4

88443

S/056/60/039/006/035/063
B006/B063

9,6150

AUTHOR: Dovzhenko, O. I.

TITLE: Calculation of Transitions Effects at Different Distances From the Axis of an Electron-Photon Shower

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 6(12), pp. 1686 - 1692

TEXT: The usual recording instruments used to investigate the spatial distribution of charged particles in extensive air showers are thin-walled ionization chambers or cloud chambers coated with a heavy material (brass, steel, etc.). On the passage of an electron-photon shower through the thin matter, the number of electrons is largely dependent on the air-to-wall transition effect of the apparatus. In this connection, a knowledge of the influence exerted by the transition effects occurring on the wall of the apparatus upon the actual spatial distribution is indispensable. This question has been theoretically studied by S. Z. Belen'kiy for the case where the spectrum of electrons and photons is in equilibrium. Belen'kiy's formulas cannot be used to determine the transition effect at

Card 1/3

88443

Calculation of Transitions Effects at Different Distances From the Axis of an Electron-Photon Shower

S/056/60/039/006/035/063
B006/B063

different distances r from the shower axis where the spectrum is not in equilibrium for a given r. A method has now been suggested for calculating transition effects in thin layers of matter ($t < 1$ rad.length) for an electron-photon radiation with any spectrum. First, a relation is formulated for the change with depth t of the number of electrons and photons in the second medium which is penetrated by the radiation. The relation is solved according to S. Z. Belen'kiy, by the method of successive approximations. For the solution, it is assumed that the photon spectrum does not vary considerably during the penetration of the layer. This means that $t < 1/\sigma_2$ (σ_2 - photon absorption coefficient in the second medium), and that the number of electrons recorded in the apparatus is not greatly affected by the variation of the electron spectrum. It is shown how to calculate the spatial electron distribution in the second medium ($t < 1$) by simple quadratures, provided the differential energy spectra of electrons and photons in the first medium are known. To illustrate the method, the transition effects occurring on the wall of an ionization chamber are calculated by the momentum method for different

Card 2/3

Calculation of Transitions Effects at Different Distances From the Axis of an Electron-Photon Shower

S/056/60/039/006/035/063
B006/B063

distances r, for s = 1, and for an infinitely high initial energy. A. A. Yemel'yanov, G. T. Zatsepin, and S. I. Nikol'skiy are thanked for a discussion. I. P. Ivanenko is mentioned. There are 4 figures and 10 references: 3 Soviet, 1 Italian, 5 US, and 1 Japanese.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics imeni P. N. Lebedev, Academy of Sciences USSR)

SUBMITTED: June 11, 1960

Card 3/3

DOVZHENKO, O. I., Cand. Phys-Math. Sci. (diss) "Investigation of Structure of Stems of Broad Atmospheric Showers of Cosmic Rays." Moscow, 1961, 14 pp (Moscow State Univ,; Scientif. Research Instit. of Physics) 175 copies (KL Supp 12-61, 250).

L 16886-63 EPF(n)-2/EWT(m)/BDS AFFTC/ASD/SSD Pu-4

ACCESSION NR: AP3005278 S/0056/63/045/002/0268/0278

AUTHOR: Dovshenko, O. I.; Pomanskiy, A. A.

TITLE: Radiation units and critical energies for various substances

SOURCE: Zhur. eksper. i teoret. fiz., v. 45, no. 2, 1963, 268-278

TOPIC TAGS: radiation t-unit, bremsstrahlung, pair production, critical energy, electron-photon cascade

ABSTRACT: The values of the radiation units and critical energies are derived on the basis of current theoretical and experimental notions, and the reasons for discrepancies between the values of the radiation units and the critical energies corresponding to the most accurate current data are analyzed. The various to reconcile the calculations in the Hartree-Fock, Thomas-Fermi and Thomas-Fermi- and Kirpichev-Pomeranchuk models are described, followed by various attempts to take into account the radiation processes occur-

Card 1/2

L 16886-63

ACCESSION NR: AP3005278

5

...ield of the atomic electrons. The ... calcu-
... elements are ... as-

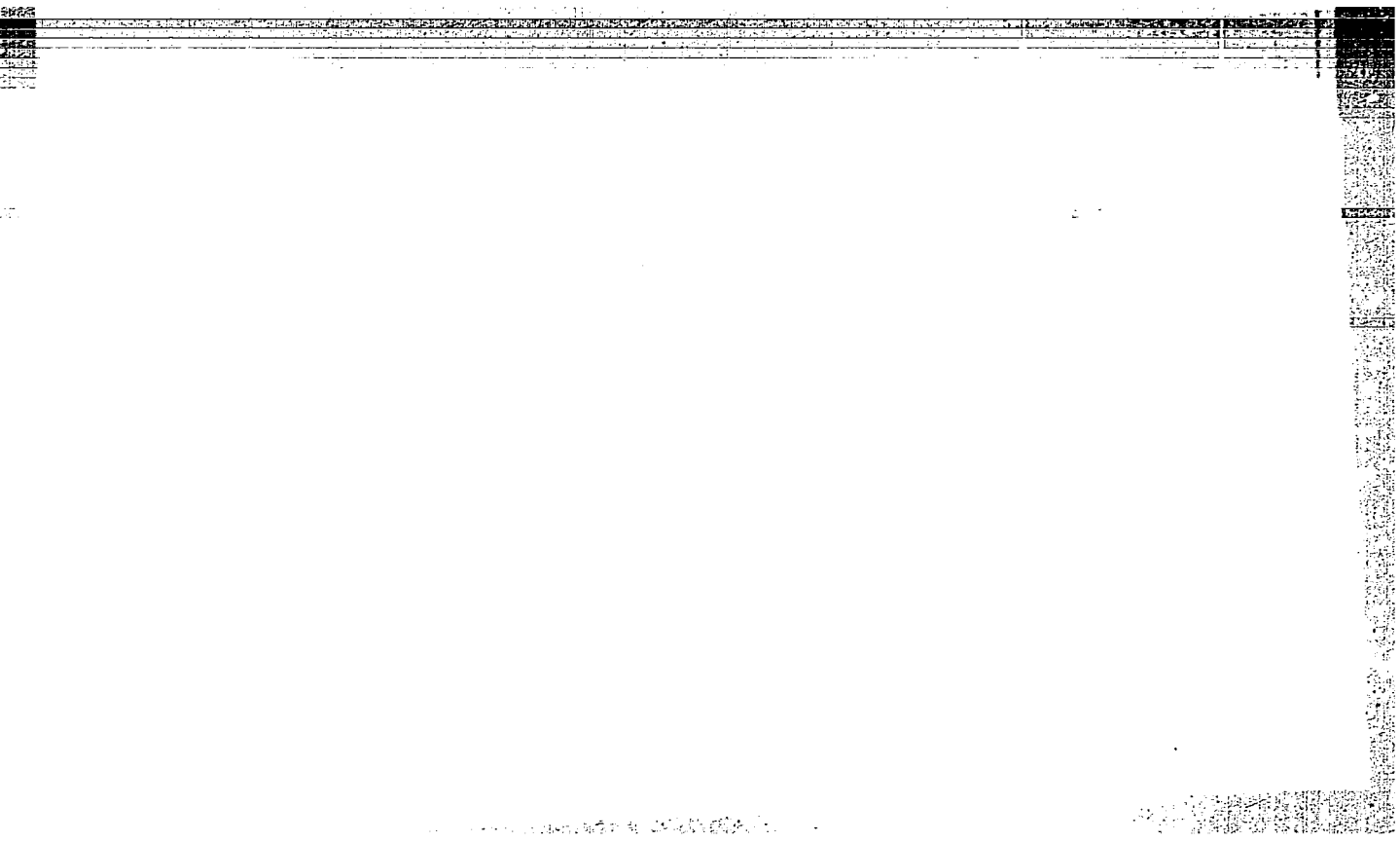
... and 2 tables.

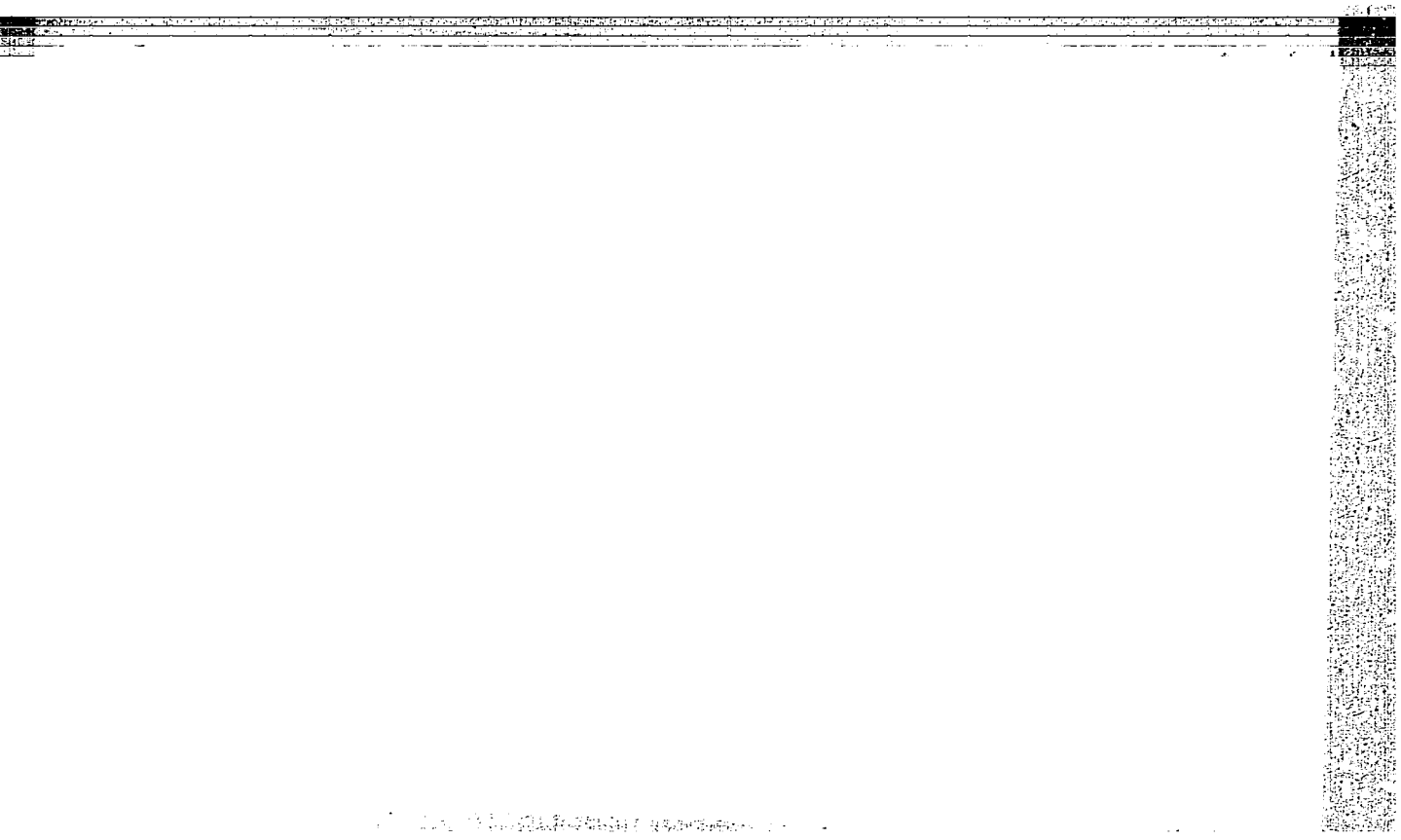
... Fizicheskiy institut im. P. N. Lebedeva Akademii nauk
SSSR (P. N. Lebedev Physics Inst. Acad. Sci. SSSR)

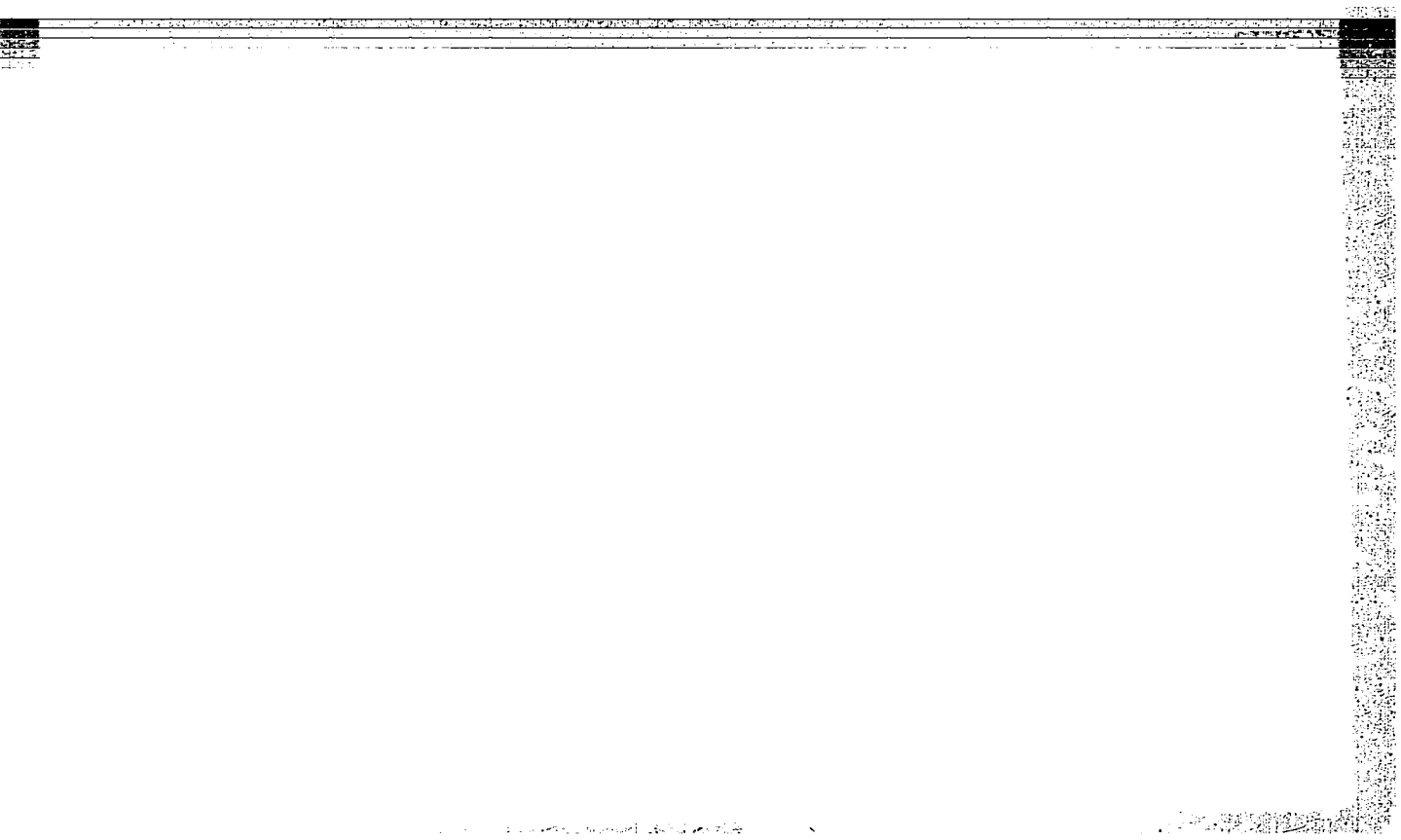
SUBMITTED: 26Jan63 DATE ACQ: 06Sep63 ENCL: 02

SUB CODE: PH NO REF SOV: 009 OTHER: 027

Card 2/4







on the basis of modern theoretical concepts regarding radiation stopping cross section

L 2534-66 EWT(m)/EWP(j)/EWA(h)/EWA(1) RM

ACCESSION NR: AP5021335 UR/0120/65/000/004/0077/0082

539.1.074.3

AUTHORS: Yudin, Ye. P.; Dovzhenko, O. I.; Denisov, Ye. V.

TITLE: Study of a large plastic scintillator

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1965, 77-82

TOPIC TAGS: scintillator, plastic, photomultiplier, polystyrene, meson

ABSTRACT: The scintillation properties of a block of polystyrene (100 x 100 x 30 cm) doped with about 1% paraterphenyl and about 0.05% POPOP were examined. Light flashes were recorded by a FEU-28B photomultiplier, and all measurements were made at 1050 v. This is a logarithmic multiplier with a wide range of pulse heights. A pyramidal light guide was placed between the scintillator and the photomultiplier. Guides with three different apical angles were used: 36, 78, and 106°. Geiger counters were placed to cover part of the face of the scintillator. In all, 32 counters were used in a very elaborate setup, detailed diagrams of which are given in the article. For the light guide with apical angle of 106°, the most probable pulse height proved to be 2.8 mv; for 78° it was

Card 1/2

2.5 mv, and for 36°, 0.6 mv. The ratio of most probable pulse heights of particles passing through the center and through the extreme corners of the scintillator proved to be 18. The described detector may be used for determining density of particle streams in broad atmospheric showers at different positions of the shower axis. It was found that the pulse amplitudes taken from the photomultiplier during passage of a shower of 10 particles through the scintillator were 28, 26, and 6.2 mv for the three apical angles 106, 78, and 36°, respectively. The standard deviations for these were 18.5, 16.5, and 14.5%, respectively. "In conclusion, the authors express their sincere thanks to S. I. Nikol'skiy for his valuable suggestions during discussion of the experimental data, N. S. Rastorgueva for her aid in working up the results, and L. Ye. Andreyev for his aid in setting up the apparatus." Orig. art. has: 6 figures. [04]

ASSOCIATION: Fizicheskiy institut AN SSSR, Moscow (Physics Institute, AN SSSR)

SUBMITTED: 24Jun64 ENCL: 00 SUB CODE: OP, EM

NO REF SOV: 001 OTHER: 001 ATD PRESS: 4110

Card 2/2

ACC NR: AP6034219 (N) SOURCE CODE: UR/0120/66/000/005/0050/0055

AUTHOR: Dovzhenko, O. I.; Yudin, Ye. P.

ORG: Institute of Physics, AN SSSR, Moscow (Fizicheskiy institut AN SSSR)

TITLE: A device for the automatic determination of the angles of inclination of the areas of broad atmospheric cosmic ray showers

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1966, 50-55

TOPIC TAGS: cosmic ray measurement, cosmic ray shower, scintillation detector, coincidence measurement, photomultiplier, cosmic ray particle

ABSTRACT: An instrument for determining the zenith and azimuth axes of angles of inclination in broad atmospheric cosmic ray showers and a method for recording the angle information in binary code are reported by the authors. The instrument works as follows: four groups of particle detectors are located at the corners of a square with a diagonal of 40 m. Each group of detectors consists of five photomultipliers and scintillation plates. Four of the photomultipliers generate outputs which are linearly added and subsequently used for computing the data, using coincidence techniques. The fifth serves to monitor the particle density at a given location. The photomultipliers are equipped with hoods which ensure that only direct light pulses from the scintillating material are admitted. It is necessary to select the photomultipliers for uniform

Card 1/3 UDC: 539.1.074:537.591

gain in the presence of the earth magnetic field. Thus this selection is carried out with proper photomultiplier orientation with respect to the magnetic field. Minor gain correction is possible by varying dynode potentials. The desired information in computed from the delay times of particle registration between various detector groups. If τ_1 is the delay between detectors 1 and 2 (located on the x axis), and τ_2 is the delay between the detectors 3 and 4 (located on the y axis), then the angles can be found from the following relations:

$$\sin\theta = (c/2a)\sqrt{\tau_1^2 + \tau_2^2}, \qquad \operatorname{tg}\varphi = \tau_1/\tau_2,$$

where $2a$ is the length of the diagonal of the square, c is the velocity of the shower front propagation, close to the speed of light. The pulses from the photomultipliers are amplified in the wide band amplifier and fed through identical length transmission lines into the time coincidence and recording system. The pulses are shaped and introduced into two delay lines, each having 23 channels. The width of each channel is 5 ± ± 0.3 nsec. The delay lines form part of the coincidence circuit, the output of which is pulses, with amplitudes proportional to the degree of coincidence. The channels in which the maximum coincidence occurs are identified in binary code, and this information is recorded on magnetic tape for subsequent processing. There are two separate coincidence circuits; one for each pair of detector groups. The equipment was tested at the high-altitude scientific station in Tien-Shan. The angle determination was accu-

ACC NR: AP6034219

rate up to 7°. The authors thank S. I. Nikol'skiy for his constant attention to this work, and L. A. Andreyev, G. P. Banchenko, and Ye. I. Molchanov for their assistance in setting up the equipment. Orig. art. has: 4 figures, 2 formulas.

SUB CODE: 04-/09/ SUBM DATE: 12Aug65/ ORIG REF: 003/ OTH REF: 003

Card 3/3

DOVZHENKO, S. I.

THE ENERGY SPECTRUM OF NUCLEAR-ACTIVE PARTICLES OF COSMIC RAYS AT 3860 METERS ALTITIDE, AND ASSOCIATED EXTENSIVE AIR SHOWERS

S.I. Dovzhenko, G.T. Zatsepin, Ye.A. Murzina, S.I. Nikolsky, V.I. Yakovlev

1. The energy spectrum of nuclear-active particles has been investigated by means of cylindrical ionization chambers of total area I m^2 placed under lead layers of 20, 50 and 80 cm, and also by mears of flat ionization chambers of area 2 m^2 placed in a lead block with an 8 cm thick top cover surmounted by a layer of graphite of varying thickness (25 - 65 cm.) To register the extensive air showers the first series of measurements was made by hodoscope counters, and the second, by ionization chambers.

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

DOVZHENKO, S. I.

ENERGY SPECTRA OF THE ELECTRON-PHOTON COMPONENT IN EXTENSIVE AIR SHOWERS NEAR THE SHOWER AXIS

S.I. Nikolsky, S.I. Dovzhenko, I.V. Rakobolskaya

1. The study was carried out in 1957-1958 at sea level with a cloud chamber triggered by a system of counters.

2. The triggering counter system made it possible to select air showers, the axes of which fell near the cloud chamber. In addition, during the study, the system was altered so as to register most effectively showers with a given number of particles: $\bar{N} = 8 \times 10^3$; $\bar{N} = 1.2 \times 10^4$; $\bar{N} = 3 \times 10^4$. The position of the shower axis and the number of particles in it were determined from the readings of the hodoscope counters. A total of 4500 showers were registered.

3. The rectangular cloud chamber (60 x 60 cm) with a depth of 30 cm had 6 plates of lead making a total thickness of 120 g/cm^2. When an electron or photon entered the chamber, a cascade shower was observed produced by these particles in the lead sheets. The energy of the electrons and photons was determined from the total number of particles registered between the lead sheets in the cascade showers.

4. As a result of these measurements we have obtained the integral energy spectra of a sum of electrons and photons for each of the shower groups; the fraction of high-energy electrons and photons ($\geq 10^9$ ev) in the total number

of electrons of all energies in the 0-3 metre distance range from the shower axis was also determined. A comparison of experimental data with calculations based on cascade theory shows that energy spectra near the shower axis (0-3 m) are depleted in the high-energy region (10^9 - 10^{10} ev).

Report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

DOVZHENKO, T., starshiy arkhitektor

What will the experimental housing project be like. Znan. to pratsia no. 2:2-3 F '61. (MIRA 14:5)

1. Kiyevproyekt.

(Kiev—Housing)

DOVZHENKO, V.G.

VOINOV, A.G., inshener; DOVZHENKO, V.G., inshener.

Railroad platform cars with dump bodies for bulk material. Mekh.trud.rab. 7 no.9:45-46 S '53. (MLRA 6:9)

(Railroad--Freight cars)

DOVZHENOK, V. I.

USSR/ Miscellaneous - Political history

Card 1/1 Pub. 138 - 3/10

Authors : Dovzhenok, V.I.

Title : The early populace and the common origin of the Russian, Ukrainian and Byellorussian nations

Periodical : Visnik AN URSR 5, 33-45, May 1954

Abstract : Documentary proof is presented on the common racial origin of the peoples of Russia, Ukraine and Byelorussia. Forty-three USSR references (1848-1954).

Institution: .....

Submitted: .....

DOVZHENKO, V. R., vrach (Feodosiya)

"Feodosiya." Zdorov'e 8 no.7:30 Jl '62. (MIRA 15:7)

(FEODOSIYA--MINERAL WATERS)

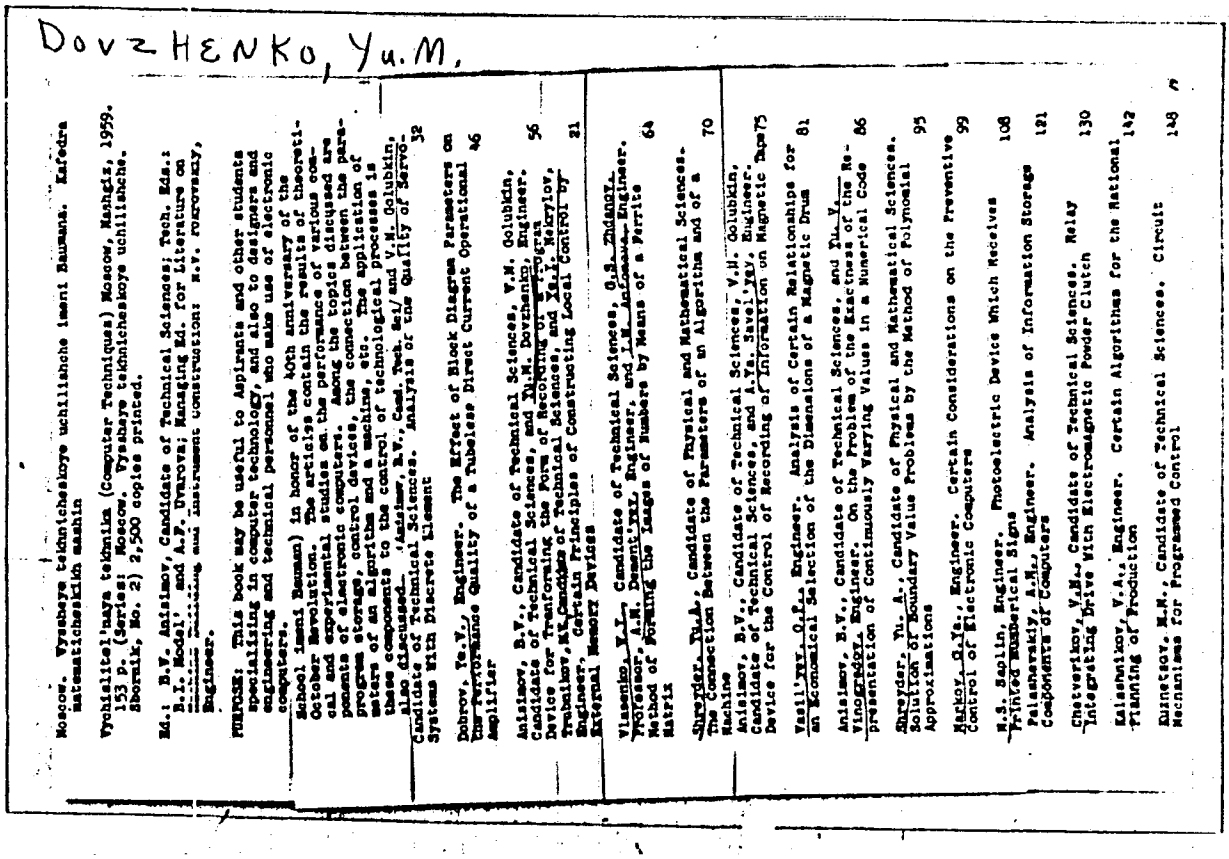
TITENKO, Anna Stepanovna; DOVZHENKO, Vladimir Romanovich; POLYAKOV, I., red.; FISENKO, A., tekhn. red.

[Public health enthusiasts]Entuziasty zdravookhraneniia. Simferopol', Krymizdat, 1960. 62 p. (MIRA 15:11)
(CRIMES—PUBLIC HEALTH)

VISHNYAKOV, R.N.; DOVZHENKO, Yu.A.; LYSENKINA, D.S.; SYRKIN, Ya.M.

New cements for wells with high bottom temperatures. Neft. i gaz. prom. no.4:20-23 O-D '63. (MIRA 17:12)

1. Gosudarstvennyy institut po proyektirovaniyu tsementnykh zavodov v yuzhnykh rayonakh SSSR.



DOVZHENKO, Yu.M.

Moscow. Vysshaya tekhnicheskoye uchilishche imeni Baumana. Kafedra matematicheskikh mashin

Vychislitel'naya tekhnika (Computer Techniques) Moscow, Mashgiz, 1959. 153 p. (Series: Moscow. Vysshaye tekhnicheskoye uchilishche. Sbornik, No. 2) 2,500 copies printed.

Ed.: B.V. Anisimov, Candidate of Technical Sciences; Tech. Eds.: B.I. Model' and A.F. Dvurova; Managing Ed. for Literature on [illegible] and Instrument Construction: N.V. Rozovskiy, Engineer.

PURPOSE: This book may be useful to Aspirants and other students specializing in computer technology, and also to designers and engineering and technical personnel who make use of electronic computers.

CONTENTS: The articles in honor of the 40th anniversary of the School imeni Baumana contain the results of theoretical October Revolution. and experimental studies on the performance of various components of electronic computers. Among the topics discussed are program storage, control devices, the connection between the parameters of an algorithm and a machine, etc. The application of these components to the control of technological processes is also discussed. [illegible], B.V., Cand. Tech. Sci/ and V.M. Golubkin, Candidate of Technical Sciences. Analysis of the Quality of Servo-Systems With Discrete Element 32

Dobrov, Ye.V., Engineer. The Effect of Block Diagram Parameters on the Performance Quality of a Tubeless Direct Current Operational Amplifier 46

Anisimov, B.V., Candidate of Technical Sciences, V.M. Golubkin, Candidate of Technical Sciences, and Zh.M. Dovzhenko, Engineer. Device for Transforming the Form of Recording of Information 56

Trakhtman, A.M. Candidate of Technical Sciences, and V.I. Mikrylov, Engineer, Certain Principles of Constructing Local Control by External Memory Devices 21

Vissenko, V.I., Candidate of Technical Sciences, G.S. Zhdanov, Professor, A.M. Desnitskiy, Engineer, and I.M. Ivanova, Engineer. Method of Forming the Image of Numbers by Means of a Ferrite Matrix 64

Shreyder, Yu.A., Candidate of Physical and Mathematical Sciences. The Connection Between the Parameters of an Algorithm and of a Machine 70

Anisimov, B.V., Candidate of Technical Sciences, V.M. Golubkin, Candidate of Technical Sciences, and A.Ya. Savel'yev, Engineer. Device for the Control of Recording of Information on Magnetic Tape 75

Vasil'yev, O.F., Engineer. Analysis of Certain Relationships for an Economical Selection of the Dimensions of a Magnetic Drum 81

Anisimov, B.V., Candidate of Technical Sciences, and Yu.V. Vinogradov, Engineer. On the Problem of the Exactness of the Representation of Continuously Varying Values in a Numerical Code 86

Shreyder, Yu. A., Candidate of Physical and Mathematical Sciences. Solution of Boundary Value Problems by the Method of Polynomial Approximations 95

Markov, G.Ye., Engineer. Certain Considerations on the Preventive Control of Electronic Computers 99

N.S. Soplin, Engineer. Photoelectric Device Which Receives Printed Numerical Signs 108

Palashanskiy, A.M., Engineer. Analysis of Information Storage Components of Computers 121

Chetverikov, V.N., Candidate of Technical Sciences. Relay Integrating Drive With Electromagnetic Powder Clutch 130

Kalashnikov, V.A., Engineer. Certain Algorithms for the National Planning of Production 142

Rubinstein, M.M., Candidate of Technical Sciences. Circuit Mechanisms for Programmed Control 148

ANISIMOV, B.V.; KUZIN, Ye.S.; DOVZHENKO, Yu.M.

Selecting the logical system and parameters of a calculating machine used for program control. Nauch. dokl. vys. shkoly; mash. i prib. no.2:183-189 '59. (MIRA 12:12)
(Electronic calculating machines)

41202

S/194/62/000/007/025/160
D222/D309

1.7000

AUTHORS: Anisimov, B.V., Dovzhenko, Yu.M., and Kuzin, Ye.S.

TITLE: A special purpose computer for the preparation of information for program-controlled machine-tools

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 7, 1962, abstract 7-1-138 shch (In collection: Primeneniye vychisl. tekhniki dlya avtomatiz. proiz-va M., Mashgiz, 1961, 295 - 306)

TEXT: One of the most promising methods of preparing machine parts having complex curved surfaces is the use of program-controlled milling machines. The information on the required machining containing the values for the coordinates of the center of the cutter at successive time intervals, and instructions for the execution of various auxiliary actions is recorded on a special carrier and is decoded by a unit located near the machine. At the department of VM MVGU, im. Baumana (VM MVGU im. Bauman) a simple special-purpose computer has been designed which is sufficiently fast for the preparation of information. The initial information contains the co-

Card 1/3

A special purpose computer for ...

ordinates of a number of points of the surface, data on the transitions between the different sections of the components and a number of technological details. The output information must contain the coordinates for all the intermediate positions of the center of the cutter which it must occupy successively during the process (this is coded in a form convenient for the information processing unit). The special purpose computer МПИ (MPI) has two arithmetic units: a proper arithmetic unit (operating speed 50 operations per second) in which the technological calculations related to the optimal machining regimes are executed, the boundaries of the sections with various points of the surfaces are determined, and the parameters of the cutter trajectory are calculated, and an interpolator (operating speed 4000 operations per second) used in calculations of interpolational formulas to determine the intermediate points of cutter position. An analysis has shown that the whole variety of surfaces and transitions of components can be reduced to a number of standard subroutines. For the majority of components the set of standard subroutines, and also their sequencing is similar. The standard subroutines must be kept in storage, and before the solution a control program is called in. A magnetic drum is used as the

A special purpose computer for ... S/194/62/000/007/025/160
D222/D309

storage in unit MPI. The simplest interpolator circuit is obtained with a broken-line approximation of the cutter center with polynomials of the form

$$\left.\begin{aligned} x &= a_2t^2 + a_1t + a_0 \\ y &= b_2t^2 + b_1t + b_0 \\ z &= c_2t^2 + c_1t + c_0 \end{aligned}\right\}.$$

Here the coordinates are functions of time. The interpolator of the MPI computer calculates only some points of the trajectory according to the formulas; a linear-quadratic interpolation with respect to time is used. The block diagrams of the interpolator and of the arithmetic unit are given. An adder of the accumulator type is used. The operations are carried out only on the moduli of the numbers, the signs enter a block for sign analysis. Addition is done in a complement code in which one of the terms, if its sign is different is always transformed. The operations of multiplication, division and the extraction of square roots is carried out with a round-off in the last digit. 5 figures. [Abstracter's note: Complete transl.]
Card 3/3

ZAVERBNYY, R.N., inzh.; DOVZHENKO, Yu.V., inzh.

Increasing the reliability and durability of machines for chemical protection of plants. Mashinostroenie no.5:102-105 S-O '65. (MIRA 18:9)

DOVZHIK, B.V., kandidat ekonomicheskih nauk, dotsent.

Varieties of over-all interfactory planning systems used in piece and serial machinery production. Trudy LIEI no.10:48-60 '55. (MLRA 9:8)

(Factory management) (Machinery industry)

DOVZHIK, B.; LEVIN, S.; ZVYAGINTSEV, Ye.

Manuals of wage schedules based on job qualifications. Sots. trud. no.12:39-51 D '56. (MLRA 10:2)

1. Leningradskiy inzhenerno-ekonomicheskiy institut. (for Dovzhik) 2. Ukrainskiy nauchno-issledovatel'skiy institut metallov. (for Levin) 3. Institut "Yuzhgiproruda." (for Zvyagintsev).

(Wages) (Job Analysis)

DOVZHIK, B. (Leningrad).

Factory planning practice in machinery manufacturing. Vop.ekon.no.12: 142-145 D '56. (MLRA 10:2)
(Machinery industry)

DOVZHIK, B.V., kandidat ekonomicheskikh nauk, dotsent.

Working out a system for planning designing in tool production. (MIRA 10:7)
Trudy LIMI no.14:102-120 '57.
(Tools) (Industrial management)

LOVZHIK, B.

Establishing the qualification of engineers, technicians, and employees. Sots.trud. no.9:55-59 '58. (MIRA 11:10)
(Job analysis)

TREPENENKOV, Roman Isidorovich, dots., kand. tekhn. nauk; SHTAYERMAN, M.Ya., prof., doktor tekhn. nauk, retsenzent; LOVZHIK, G.A., inzh., retsenzent; BAGUZOV, N.P., kand. tekhn. nauk, nauchnyy red.; YEGOROVA, I.O., red. izd-va; NAUMOVA, G.D., tekhn. red.

[Album of drawings of structural elements and details of industrial buildings] Al'bom chertezhei konstruktsii i detalei promyshlennykh zdanii. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 91 p. (MIRA 14:12)
(Industrial buildings) (Building--Details)